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# Flight speed and agitation are not good indicators of lamb carcass quality

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Temperament is an individual's behavioural and physiological response to stressors, such as handling by humans. It may be beneficial to use temperament as an indirect selection criterion for production traits that are difficult to measure, such as meat quality and also to improve welfare and ease of handling. The relationship between sheep temperament and meat quality is unknown, although there have been links demonstrated in cattle (Fordyce *et al.* 1988). We hypothesise that lambs which are less stressed during handling will have higher quality carcasses.

Slaughter records from 2008, 2009 and 2010 lambings of the Information Nucleus flock (Mortimer *et al.* 2010) were analysed with agitation and flight speed measures taken on lambs two to six weeks after weaning. Agitation was measured by isolating lambs in a fully enclosed box (1.5 x 0.7 x 1.5m) and recording the amount of movement by the lambs in 30 seconds (Blache and Ferguson 2005). A flight speed recorder was used to measure the time it took lambs to pass between two beams of light.

Flight speed and agitation were genetically correlated with each other (0.27), although phenotypic correlations were negligible. Heritabilities of flight speed and agitation were 0.13 and 0.20 respectively.

Flight speed and agitation are not good indicators of lamb carcass quality. Phenotypic correlations between these measures of lamb behaviour and carcass quality traits were not different from zero. Genetic correlations were opposite to that expected, with faster lambs (indicating greater reactivity) having more fat (0.30), heavier carcasses (0.19) and improved tenderness in the loin (-0.26). As expected, carcass pH at 18°C was higher in more agitated lambs (0.20), but surprisingly more agitated lambs also had improved tenderness in the loin (-0.19).

It appears that flight speed and agitation do not adequately measure the degree of stress on lambs. These measures assume that greater activity during handling indicates greater stress, however some breeds are observed to "freeze" when stressed. Thus, either stress is not related to lamb carcass quality, or more likely more effective measures of stress in the lamb are needed in order to accurately determine the relationship between stress and carcass quality.

Blache D, Ferguson D (2005) Increasing sheep meat production efficiency and animal welfare by selection for temperament. Meat & Livestock Australia.

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Mortimer SI, van der Werf JHJ, Jacob RH, Pethick DW, Pearce KL, Warner RD, Geesink GH, Edwards JEH, Gardner GE, Ponnampalam EN, Kitessa SM, Ball AJ, Hopkins DL (2010) Preliminary estimates of genetic parameters for carcass and meat quality traits in Australian sheep. *Animal Production Science* **50**(11-12), 1135-1144.